

Technical data sheet

22RTH-59-1

Room sensor Humidity / Temperature

Active room temperature and humidity sensor with incorporated NFC technology. Selectable outputs include 0...5V, 0...10V, 2...10V and MP-Bus. NFC capabilities allow for easier setup, commissioning and troubleshooting.











	Туре	Communication	Output signal active humidity	Output signal active temperature
	22RTH-59-1	MP-Bus	05 V, 010 V, 210 V	05 V, 010 V, 210 V
echnical data				
Electrical Data	Nominal voltage		AC/DC 24 V	
_:	Nominal voltage range		AC 19.228.8 V / DC 19.228.8 V	
	Power consumption AC		1 VA	
	Power consumption DC	•	0.5 W	
	Electrical connection		Spring loaded terminal 0.251.5 mm ²	
	Cable entry		Wire openings at the l wiring) and top-/botto wiring)	
Functional Data	Application		air	
	Communication		MP-Bus	
	Voltage output		2x 05 V, 010 V, 210 V, min. load 10 kΩ	
	Output signal active note		Output 05 V, 010 V (factory setting), 210 selectable via NFC	
Measuring Data	Measured values		relative humidity Dew point Temperature	
	Measuring range humidity		0100% RH	
	Measuring range temp	erature	32122°F [050°C]	
	Accuracy humidity		±2% between 080%	RH @ 25°C
	Accuracy temperature active		±0.9°F @ 77°F [±0.5°C @ 25°C]	
	Long-term stability		±0.50% RH p.a. @ 77°f ±0.05°F p.a. @ 77°F [± [±37.4°F p.a. @ 77°F]	
	Time constant τ (63%) i	n the room	Typical 960 s	
	Wall Coupling Factor		52 %	
Materials	Housing		PC, white, RAL 9003	
Safety Data	Ambient humidity		Max. 95% RH, non-condensing	



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Safety Data

Ambient temperature	30120°F [050°C]
Storage temperature	-4.0140°F [-2060°C]
Protection class IEC/EN	III, Protective Extra-Low Voltage (PELV)
EU Conformity	CE Marking
Certification IEC/EN	IEC/EN 60730-1 and IEC/EN 60730-2-9
Degree of protection IEC/EN	IP30
Degree of protection NEMA/UL	NEMA 1
Quality Standard	ISO 9001

Safety Notes



This device has been designed for use in stationary heating, ventilation and air-conditioning systems and must not be used outside the specified field of application. Unauthorized modifications are prohibited. The product must not be used in relation with any equipment that in case of a failure may threaten humans, animals or assets.

Ensure all power is disconnected before installing. Do not connect to live/operating equipment. Only authorized specialists may carry out installation. All applicable legal or institutional installation regulations must be complied during installation.

The device contains electrical and electronic components and must not be disposed of as household refuse. All locally valid regulations and requirements must be observed.

Remarks

General Remarks Concerning Sensors

The measuring result is influenced by the thermal characteristics of the wall. A solid concrete wall responds to thermal fluctuations within a room slower than a light-weight structure wall. Room temperature sensors installed in flush-mounted boxes have a longer response time to thermal variations. For example, in extreme cases they will detect the radiant heat of the wall even if the air temperature in the room is lower. The quicker the dynamics of the wall (temperature acceptance of the wall) or the longer the selected inquiry interval of the temperature sensor is, the smaller the deviations are.

Build-up of self-heating by electrical dissipative power

Temperature sensors with electronic components always have a dissipative power which affects the temperature measurement of the ambient air. The dissipation in active temperature sensors shows a linear increase with rising operating voltage. The dissipative power should be taken into account when measuring temperature. In case of a fixed operating voltage (±0.2 V) this is normally done by adding or reducing a constant offset value. As Belimo transducers work with a variable operating voltage, only one operating voltage can be taken into consideration, for reasons of production engineering. Transducers 0...10 V / 4...20 mA have a standard setting at an operating voltage of DC 24 V. That means, that at this voltage, the expected measuring error of the output signal will be the least. For other operating voltages, the offset error will be increased by a changing power loss of the sensor electronics.

If a readjustment directly at the active sensor should be necessary during later operation, this can be done with the following adjustment methods.

- For sensors with NFC or dongle by the corresponding Belimo app
- For sensors with a trimming potentiometer on the sensor board
- For bus sensors via bus interface with a corresponding software variable

Application notice for humidity sensors

Refrain from touching the sensitive humidity sensor element. Touching the sensitive surface will void warranty.

When exposed to harsh environmental conditions such as high ambient temperature and/or high levels of humidity, or presence of aggressive gases (i.e. chlorine, ozone, ammonia), the sensor element may be affected and readings may be outside the specified accuracy. Replacement of deteriorated humidity sensors due to harsh environmental conditions is not covered by the general warranty.

The sensor shows best performance when operated within recommended normal temperature range of 5...60°C and humidity range of 20...80% RH. Long-term exposure to conditions outside normal range, especially at high humidity, may temporarily offset the humidity signal (e.g. +3% RH after 60h kept at >80% RH). After returning into the normal temperature and humidity range, the sensor will slowly come back to calibration state by itself.



Digital input

Auxiliary Digital Input can be used with third-party sensors and switches (window alarm, occupancy detector, etc.). The input values are monitored and transmitted only through the MP-Bus communication protocol.

Scope of delivery

Screws

Ac	cess	ories

Service tools	Description	Туре	
	Belimo Assistant App, Smartphone app for easy commissioning,	Belimo Assistant	
	parametrising and maintenance	Арр	
	Converter Bluetooth / NFC	ZIP-BT-NFC	

Service

NFC connection

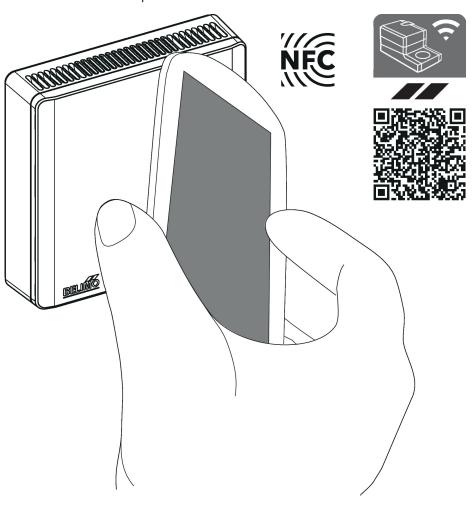
Belimo equipment marked with the NFC logo can be operated and configured with the Belimo Assistant App.

Requirement:

- NFC- or Bluetooth-capable smartphone
- Belimo Assistant App (Google Play & Apple AppStore)

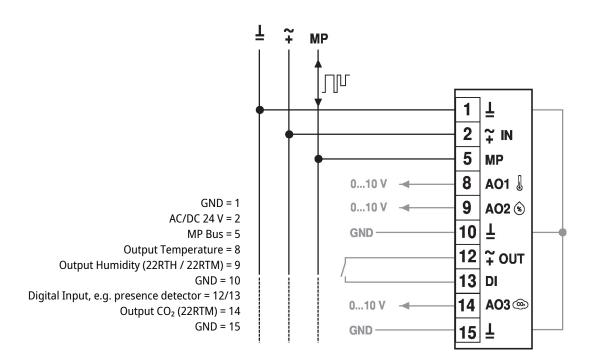
Align NFC-capable smartphone on the sensor so that both NFC antennas are superposed.

Connect Bluetooth-enabled smartphone via the Bluetooth-to-NFC Converter ZIP-BT-NFC to the sensor. Technical data and operation instructions are shown in the ZIP-BT-NFC data sheet.

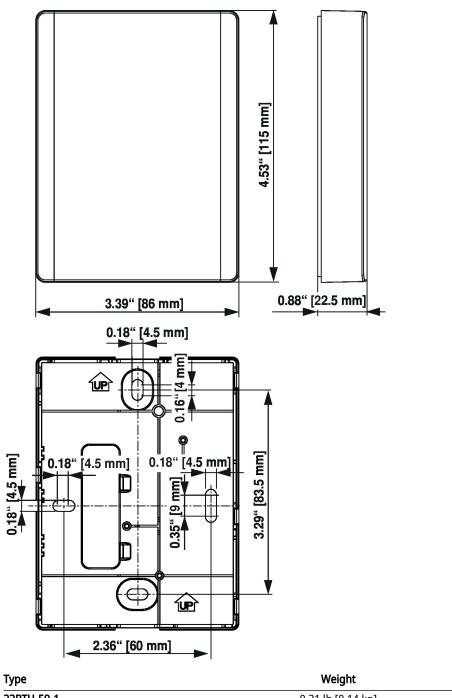




Wiring Diagram



Dimensions



22RTH-59-1 0.31 lb [0.14 kg]